

Section II (Remarks)

A. Summary of Amendment to the Claims

By the present Amendment, claims 37, 71 and 72 have been amended to recite that the liner layer interdisposed between the sensing element and the base substrate is adjacent to the sensing element.

Support for the recitation is provided, for example, in claim 68, in which the sensing element is recited as deposited on the liner layer, and further in Figures 3A and 3B which illustrate the liner layer 110 as located adjacent to the sensing element 100 and paragraph [0098], which describes Figures 3A and 3B, including "...a liner layer 110 between the sensing element and the vase substrate." Accordingly, no new matter within the meaning of 35 U.S.C. §132(a) has been introduced by the foregoing amendments.

The amendments made herein are fully consistent with and supported by the originally-filed disclosure of this application.

On the "Office Action Summary" page of the Office Action and on page 2 of the Office Action, it is stated that claims 37, 38, 40, 41 and 43-72 are pending in the present application. However, also at page 2 of the Office Action, the examiner acknowledged that claims 1-36, 39, 42, 63 and 66 have been previously cancelled in the prosecution of the present application. Accordingly, upon entry of the amendments, **claims 37, 38, 40, 41, and 43-62, 64, 65, and 67-72** will be pending and under examination.

B. Rejection of Claims Under 35 U.S.C. §102

- **Claims 37, 38, 40, 43, 45-47, 49, 50-54, and 70-71**

In the Office Action mailed December 13, 2011, the examiner maintained the rejection of claims 37, 38, 40, 43, 45-47, 49, 50-54, and 70-71 under 35 U.S.C. §102(a) as unpatentable over PCT/US03/13235 (hereinafter "Graff et al."). Applicants respectfully disagree.

Initially, it is noted that the prior rejection of claim 41 under 35 U.S.C. §102(a) as unpatentable over Graff et al. has been overcome.

Anticipation of a claim requires the disclosure in a single prior art reference of each element of the claim under consideration. (Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987.)) Graff et al. do not disclose all elements of rejected claims 37, 38, 40, 43, 45-47, 49, 50-54, and 70-71.

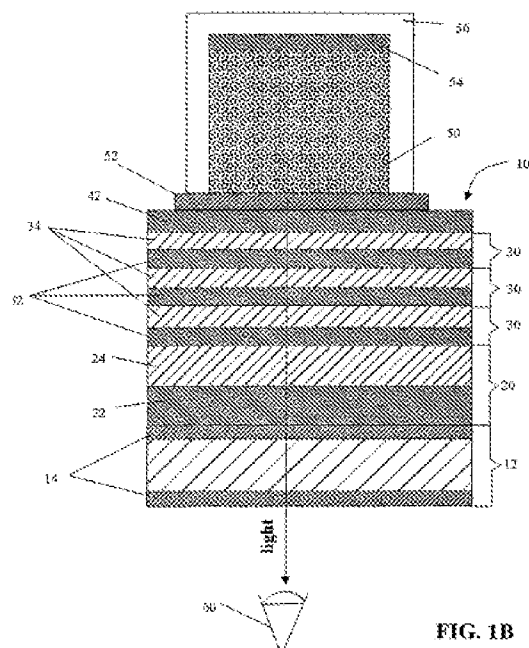
In response to applicants' prior arguments, the examiner noted that it is the examiner's understanding and assumption that "since the liquid crystal display in GRAFF is susceptible to environmental conditions, it can be considered a sensor for measuring the gas permeability." (Office Action mailed December 13, 2011, p. 6.) Applicants strenuously disagree with this characterization of the display device of Graff et al.

As previously stated by applicants, a susceptibility to environmental conditions does not amount to a sensor for measuring gas permeability. The fact remains that for the purposes of a rejection under 35 U.S.C. §102, Graff et al. fails to describe an element that is a "sensor for measuring gas permeability of a test material."

Additionally, the examiner reemphasized the assumption that the OLED or light emitting polymers could be characterized as conductive polymers, since they only emit light when situated between two electrodes and current is passed through. Applicants respectfully disagree for the reasons of record in this prosecution.

The examiner's attention is respectfully directed to Section I above, where each of independent claims 37, 70 and 71 have been amended to recite that the liner layer interdisposed between the sensing element and the base substrate is adjacent to the sensing element. Such amendment is supported by the specification, as detailed under heading "A. Summary of Amendment to the Claims" above.

Even assuming, arguendo, that Graff et al. describes the above elements as characterized by the examiner (which applicants do not concede), Graff et al. fails to describe a liner layer comprising an organic polymer and/or an inorganic polymer located adjacent to the sensing element, as recited in each of independent claims 37, 70 and 71. The examiner's attention is respectfully directed to Figure 1B of Graff et al., reproduced below for ease of reference:



As characterized by the examiner, such Figure illustrates a sensing element 50, two electrodes 52 and 54, a base substrate 12 and a liner layer 20 and 30. (Office Action mailed December 13, 2011, p. 2.) As seen in the Figure, the topmost “isolation layer” 42 (*see* paragraphs [00039], [00049] and [00050] of Graff et al.), comprising an inorganic material, such as metal oxides, metal nitrides, metal carbides, metal oxynitrides, metal oxyborides (which are not polymers) and combinations thereof, is adjacent to the display device 50 and the liner layer is separated from the sensing element 52 by such isolation layer.

Since Graff et al. does not describe a liner layer comprising an organic polymer and/or an inorganic polymer located adjacent to the sensing element, as set forth in claims 37, 38, 40, 43, 45-47, 49, 50-54, and 70-71, Graff et al. does not anticipate the claimed invention. Accordingly, withdrawal of the rejection of claims 37, 38, 40, 43, 45-47, 49, 50-54, and 70-71 under 35 U.S.C. § 102(a) as being anticipated by Graff et al. is respectfully requested.

- **Claims 68 and 69**

The status of claim 68 is unclear. On the “Office Action Summary” page of the December 13, 2011 Office Action, claim 68 is listed as rejected. However no specific rejection of claim 68 is raised in the Office Action. It is unclear whether claim 68 is included in the rejection under 35 U.S.C. §102. While not listed in the paragraph of heading “1.” on page 2 of the Office Action,

claim 68 is included in a list of claims at page 2, line 14 of the Office Action. However, if claim 68 is rejected in view of Graff et al., no such discussion is included in the Office Action.

In order to ensure that the present response addresses all issues raised by the examiner, claim 68 is discussed herein in relation to the Graff et al. reference. It is respectfully submitted that neither claim 68, nor claim 69, dependent therefrom, is anticipated by Graff et al. under 35 U.S.C. §102.

Claim 68 is a method claim, including recitation of deposition of a sensing element on the liner layer, where such liner layer comprises an organic polymer and/or an inorganic polymer. Claim 69 depends from claim 68 and by virtue of such dependency necessarily includes all elements recited in independent claim 68.

Again with reference to Figure 1B of Graff et al., the authors thereof describe forming the display device 50 on the topmost isolation layer 42, a layer which, as discussed in detail above, comprises an inorganic material, such as metal oxides, metal nitrides, metal carbides, metal oxynitrides, metal oxyborides (which are not polymers) and combinations thereof. Accordingly, Graff et al. fails to describe forming the display device 50 on a liner layer comprising an organic polymer and/or an inorganic polymer.

Since Graff et al. does not describe formation of a sensing element on a liner layer comprising an organic polymer and/or an inorganic polymer located adjacent to the sensing element, as set forth in claims 68 and 69, Graff et al. does not anticipate the claimed invention.

C. Rejection of Claims Under 35 U.S.C. §103

In the Office Action mailed December 13, 2011, the examiner maintained the rejection of claims 41, 44, 48, 51-62, 64, 65, 67, 69 and 72 under 35 U.S.C. § 103 as unpatentable over Graff et al. in view of U.S. Patent No. 4,595,485 (hereinafter “Takahashi et al.”). Applicant respectfully traverses such rejection.

Rejected claims 41, 44, 48, 51-62, 64, 65, and 67 are of dependent form under claim 37. Similarly, rejected claim 69 depends from independent claim 68 and rejected claim 72 depends from independent claim 71. Dependent claims incorporate all limitations of the claim from

which they depend.

As set forth in detail above, Graff fails to anticipate any of independent claims 37, 68 and 71, since Graff et al. fails to describe a sensor, method or system including a liner layer comprising an organic polymer and/or an inorganic polymer located adjacent to a sensing element. Citation of Takahashi et al. fails to remedy the deficiencies of Graff et al.

As provided in paragraph [0049] of the specification (WO 2005/095924), the liner layer of applicants' claimed sensor serves as a buffer region which sponges up (becomes saturated with) the permeating gases (from the base substrate and/or barrier coating covering the polymer substrate) before they are desorbed homogenously (to the sensing element). The homogeneous desorption of the permeating gases results in the uniform degradation of the sensing element which in turn enables the decrease in electrical conductivity of the sensor to be more accurately correlated to the decrease in thickness of the sensing element.

Accordingly, applicants' claimed sensor provides an improved sensor over those known previously in the art, for measuring gas permeability of a test material (*see*, for example, paragraph [0013] of the specification).

There is no rationale provided by which one of skill in the art would have modified a device of Graff et al. to arrive at applicants' claimed invention. Specifically there is no motivation in Graff et al. to either substitute a liner layer comprising an organic polymer and/or an inorganic polymer in place of the topmost isolation layer made from a non-polymeric inorganic material or to locate such a polymeric liner layer adjacent to the display device.

In considering a reference for its effect on patentability, the reference is required to be considered in its entirety, including portions of teach away from the invention under consideration. Simply stated, the prior art must be considered as a whole. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984); MPEP § 2141.02. "It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." *Application of Wesslau*, 353 F.2d 238, 241 (C.C.P.A. 1965); *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve*, 796 F.2d 443, 448 (Fed. Cir. 1986),

cert. denied, 484 U.S. 823 (1987).

Graff et al. is directed to the design of a multi-layer barrier coating directed to improve resistance to gas and liquid permeation, and therefore addresses a problem different from that in the present invention. The concept of a sensor for measuring gas permeability of a test material is not described or suggested by Graff et al. Accordingly, one of skill in the art would not have been drawn to Graff et al. in development of an improved sensor for measuring gas permeability of a test material.

Particularly, it is noted that the isolation layer of Graff et al., is made from a non-polymeric inorganic material adjacent to the display device, and is described as providing an effective primer layer for the overlying inorganic electrode layer of the display device, and tolerating the thermal input accompanying its deposition. As such, the use of a topmost isolation layer formed from (non-polymeric) inorganic material is advantageous to the device of Graff et al. and one of skill in the art would not have been motivated to modify or replace such a layer.

On the contrary, one of skill in the art would have been deterred from modifying the device of Graff et al. to modify or replace the isolation layer, since Graff et al. describes that the topmost isolation layer serves the function of isolating the barrier stack from migratory organic contaminants originating in the display device, as well as isolating the display device from migratory organic contaminants originating in the barrier stack (see, for example, paragraph [00050] of Graff et al.). In other words, one of skill in the art would not have considered the use of a liner layer as recited in applicants' sensor, comprising an organic polymer and/or an inorganic polymer, adjacent to the display device in Graff, since these materials are carbon-containing polymers, and therefore would not function as an isolation layer to prevent migration of organic contaminants between the display device and barrier stack according to Graff et al.

Furthermore, citation of Takahashi et al. fails to remedy the deficiencies of Graff et al. The combination of Graff et al. and Takahashi et al. fails to describe a sensor, method or system comprising a liner layer comprising an organic polymer and/or an inorganic polymer located adjacent to the sensing element.

Takahashi et al. describes a limiting current type oxygen sensor which is directed to measure the oxygen concentration in a gas (*see*, for example, "Field of the Invention" of Takahashi et al.).

Given that both Graff et al. and Takahashi et al. are directed to solving problems that are different from that addressed by applicants' claimed invention, an improved sensor for measuring gas permeability of a test material, one of skill in the art would not have combined Graff et al. and Takahashi et al. in seeking such an improved sensor.

Graff et al. in view of Takahashi et al. fail to provide any derivative basis for the claimed invention and, additionally, there would have been no logical reason for one of skill in the art to combine such references. Accordingly, no basis of *prima facie* obviousness of the claimed invention is presented by such cited references.

Based on the foregoing, Graff et al. in view of Takahashi et al. fails to provide any logical basis for the sensor, method or system recited in claims 41, 44, 48, 51-62, 64, 65, 67, 69 and 72. Graff et al. in view of Takahashi et al. does not render the claimed invention obvious. Accordingly, withdrawal of the rejection of claims 41, 44, 48, 51-62, 64, 65, 67, 69 and 72 under 35 U.S.C. § 103 (a) as being obvious over Graff et al. in light of Takahashi et al. is respectfully requested.

CONCLUSION

Based on the foregoing, all of applicants' pending claims 37, 38, 40, 41, and 43-62, 64, 65, and 67-72 are patentably distinguished over the art, and in form and condition for allowance. The examiner is requested to favorably consider the foregoing and to responsively issue a Notice of Allowance.

No fees are believed to be due for the filing of this paper. However, should any fees be required or an overpayment of fees made, please debit or credit our Deposit Account No. 08-3284, as necessary.

If any issues require further resolution, the examiner is requested to contact the undersigned attorneys at (919) 419-9350 to discuss same.

Respectfully submitted,

/steven j. hultquist/
Steven J. Hultquist
Reg. No. 28,021

Attorney for Applicants

/kelly k. reynolds/
Kelly K. Reynolds
Reg. No. 51,154
Attorney for Applicants

HULTQUIST IP
P.O. Box 14329
Research Triangle Park, NC 27709
Phone: (919) 419-9350
Fax: (919) 419-9354
Attorney File No.: 4528-109

<p>The USPTO is hereby authorized to charge any deficiency or credit any overpayment of fees properly payable for this document to Deposit Account No. 08-3284</p>
